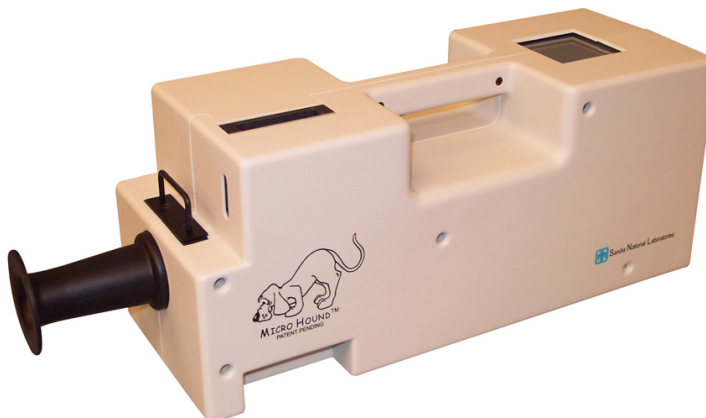


Microsensor-Based Explosives Detection (MicroHound™)



Integrated Microsystems - The MicroHound™ integrates existing innovative Sandia technologies into a hand-held, microsensor-based explosives (or other chemical) detection system.

Description

Sandia National Laboratories has developed the MicroHound™, a fast, handheld system for the trace detection of explosives. This lightweight (about 12 pounds) system can detect both explosives vapor and particulate. The development of the MicroHound™ was a quest to combine, in a single platform, a miniaturized sampling and preconcentration system with a small, highly sensitive chemical sensor that can detect nanogram amounts of explosives. The sampling and preconcentration technology used in the MicroHound™ was originally developed and patented by Sandia for a personnel explosives detection portal. This technology has demonstrated portal system sensitivities of 30 parts per quadrillion for detecting explosives. Ultimately, commercial versions of the MicroHound will be produced at a comparatively low cost (about \$5K to \$10K per mass-produced unit vs. \$20K to \$30K for current commercial handheld systems).

Features

The MicroHound™ has improved portability, reduced detector costs, multi-sensor capabilities, multi-stage preconcentration, and monolithic integration of components. In vapor mode, the sampling unit draws in a large volume of air and collects heavy organic compounds from the air stream onto a filter. In swipe mode, the operator swipes a suspicious object's surface and places the filter in a holder. The system vaporizes these compounds into a smaller parcel of air that is then delivered to an ion mobility spectrometer (IMS) detector. If explosives are found, the unit displays an alarm to the operator.

Applications

The MicroHound™ is designed for use by emergency responders to examine suspicious packages or as a tool for screening at checkpoints. The reduced size and cost of a miniaturized system would allow its use in courtrooms and schools, as well as in high-risk facilities.

Availability

The MicroHound™ is under development in phases with increasing levels of capability at each phase. This work is funded by U.S. government agencies.



Kevin Linker (kllinke@sandia.gov)
Entry Control and Contraband Detection Department
(505) 844-6999



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